

Attorney's Docket 200405.00024

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re: Patent Application of:

Inventors: Ilario Coslovi and James W. Forbes  
Serial No: 09 / 650,388  
Filed: August 29, 2000  
Title: Vehicle Carrying Railroad Car And Bridge Plate Therefor  
Assignee: National Steel Car  
Art Unit: 3617  
Examiner: Frantz F. Jules

**REQUEST FOR REINSTATEMENT OF APPEAL**

**and**

**APPEAL BRIEF**

05/17/2005 MAHMED1 00000040 09650388

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To: Mail Stop Appeal Brief- Patents  
The Honorable Commissioner of Patents and Trademarks  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Office Action of December 13, 2004 re-opening prosecution in view of the Appeal Brief filed October 19, 2004, on March 14, 2005, Applicants requested Reinstatement of Applicants' Appeal under 37 C.F.R. § 41.31 to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office from the at least twice rejected claims 3 - 32 in the above-identified patent application.

The Applicants' Brief on Appeal is filed with the requisite filing fee under 37 C.F.R. § 41.20(b)(2). Because Applicants have previously filed a Brief on Appeal on October 19, 2004, the requisite filing fee is the current fee, \$500.00, less the amount, \$330.00, previously paid, that is, a

**CERTIFICATION UNDER 37 C.F.R. § 1.8(a)**

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service in an envelope with sufficient postage as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-13450.

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*Handwritten Signature:* Michael H. Minns  
Signature

Michael H. Minns

(type or print name of person certifying)

Adjustment date: 05/17/2005 MAHMED1  
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balance of \$170.00. Charge any additional fees required by this paper or credit any overpayment to Deposit Account No. 15-0450.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37):

- I. Real Party in Interest
- II. Related Appeals and Interferences
- III. Status of Claims
- IV. Status of Amendments
- V. Summary of the Claimed Subject Matter
- VI. Grounds of Rejection to be Reviewed on Appeal
- VII. Arguments
- VIII. Claims Appendix
- IX. Evidence Appendix
- X. Related Proceedings Appendix

The final page of this brief bears the practitioner's signature.

**I. Real Party in Interest**

The real party in interest in the present application is National Steel Car Limited, by assignment from the inventors Ilario Coslovi and James W. Forbes. The assignment is recorded in the United States Patent and Trademark Office at Reel 011066, Frame 0482.

**II. Related Appeals and Interferences**

There have been neither interferences relating to this pending application, nor any related appeal or litigation.

**III. Status of Claims**

The status of the claims in this application are:

**1. Total Number of Claims in Application**

There were 46 claims pending in this application, numbered 1 to 46.

**2. Status of All of the Claims**

A. Claims cancelled: Two, namely claims 1 and 2.

B. Claims withdrawn from consideration but not cancelled: None

- C. Claims pending: Forty-four, namely claims 3 to 46.
- D. Claims allowed: There are 14 allowed claims, namely claims 33 - 46
- E. Claims objected to: There are 7 claims to which there is an objection, but that would be allowable if re-written in independent form, namely claims 11, 16, 17, 19, 21, 22 and 27.
- F. Claims rejected: There are 23 rejected claims, namely claims 3 - 9, 10, 12 - 15, 18, 20, 23 - 26 and 28 - 32.

3. **Claims on Appeal**

The claims on appeal are Claims 3 - 9, 10, 12 - 15, 18, 20, 23 - 26 and 28 - 32.

**IV. Status of Amendments**

The claims were last amended on August 20, 2002 at the time of filing of the Request for Continued Examination in this matter. The amendments submitted at that time have been entered in the case and are reflected in the current status of the claims.

No amendments have been filed, subsequent to the rejection from which this appeal was originally taken, therein contained in the Office Action mailed May 17, 2004.

**V. Summary of the Invention**

The invention is summarised in the presently pending claims. With respect to the presently rejected claims, generally speaking, in one aspect reflected in independent claim 3, it relates to a rail road car bridge plate that is operable to permit a vehicle to be conducted between respective vehicle decks of a pair of first and second coupled railroad cars. The bridge plate is locatable to span a gap between the railroad cars when the railroad cars are in motion, and has a fitting permitting the beam to be moved to a cross-wise orientation when disengaged from the second railroad car. (Page 9, lines 4 to 11)

In another aspect reflected in independent claim 13, which is generally similar to that of independent claim 3, and also includes fittings at either end thereof permitting longitudinal variation of distance between first and second axes of the adjacent railroad cars, and in which one of the two fittings is disengageable. (Page 9, line 31 to page 10, line 10)

In another aspect of the invention, reflected in independent claim 20, which is also generally similar to that of claim 3, there is a bridge plate that has a pivot fitting at one end, and a second

fitting at the other end, the second fitting including a linear extension member, and being disengageable from an adjacent railroad car. (Page 10, lines 20 to 27, and page 10 lines 8 to 11).

In still another aspect of the invention, reflected in independent claim 20, which is also generally similar to that of claim 3, there is a bridge plate kit which includes a bridge plate having first and second fittings at its respective ends, and in which one of the fittings is disengageable. (Page 10, line 36 to page 11 line 7, and page 10, lines 8 to 11).

Although specific page and line numbers have been given in parentheses, above, the application is replete with supporting material for all of the presently pending claims, both in the text and in the illustrations. Figures 3h, 4a - 4e, and 5a - 5c may be noted.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

The current grounds of rejection are given in the following statements, from the Office Action of December 13, 2004:

“3. Claims 3 - 7, 9 - 10, 13 - 15, 20, 23, 24 - 26, 29 - 32 are rejected under 35 U.S.C. §102(b) as being anticipated by Black, Jr., et al. (US 5,782,187).

Claims 3 - 7, 9 - 10, 13 - 15, 20, 23, 24 - 26, 29 - 32

Black Jr et al teach all the limitations of claims 3 - 7, 9 - 10, 13 - 15, 20, 23, 24 - 26, 29 - 32 by showing in figs 1-9, a railroad car bridge plate operable to permit a vehicle to be conducted between two railroad cars (22a, 22b) as disclosed in col. 9, lines 45 - 50 and fig. 6, said bridge plate (32) comprising a beam locatable in a longitudinal orientation of sufficient length to span a gap between a pair of adjacent railroad cars (22a, 22b), said beam having an upwardly facing track surface or flange (34) for vehicle [sic] to ride on, said beam having a first pivot fitting (102a) allowing mounting of the beam to the railroad car (22a), said beam having a second fitting (102b) for engaging a second railroad car (22b), said fittings being operable to accommodate yawing of said beam relative to the first or second railroad cars (22a, 22b) when said beam is located in the longitudinal orientation, and the railroad cars [sic: are ?] in motion and one of said first and second fittings and said fitting [sic ?] permitting movement in a cross-wise orientation relative to the first railroad car when said beam is disengaged from the second railroad car. The yawing motion of the beam in a direction transverse to the longitudinal plane of the railcars will result whenever the two railroad cars are is [sic] to be disconnected since a polymeric collar (111) is provided around the member (102) as shown in fig. 8 for low friction sliding of the fittings 102a and 102b within their respective slots 106a and 106b as disclosed in col. 9, lines 51 - 53.”

The first and second railroad cars are releasably coupled to one another or are disengageable since a threaded connection is used to connect the bridge plate to the railroad cars. Moreover said fitting consisting of collars (111, 102) for receiving a vertical pivot pin (105), said bridge plate being translatable relative to said second axis whenever one of the pivot pins is removed since a threaded bolt member (105) is used to connect the bridge plate (32) to the railcar (22a or 22b), see fig. 8.”

“5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black Jr et al '187 in view of Petersen (US 5,836,028)

#### Claim 8

Black Jr. et al teach all the limitations of claim 8 except for a railroad car bridge plate having traction bars on the upper surface thereof. The general concept of using traction bars on the top surface of a bridge plate is well known in the art as illustrated by Petersen which disclose the teaching of a ramp member comprising traction bars (20) mounted to the top surface thereof, see col 4, lines 8-12. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Black Jr et al to include the use of traction bars on top of a bridge plate in his advantageous railroad car bridge plates as taught by Petersen in order to provide traction for the vehicles or load.”

“6. Claims 12, 18, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black Jr et al '187 in view of Thompson '478

#### Claims 12, 18, and 28

Black Jr. et al. teach all the limitations of claims 12, 18, 28 except for a railroad car bridge plate having a hand grab mounted thereto. The general concept of adding a hand grab to a bridge plate assembly of a railroad car unit is well known in the art as illustrated by Thompson '478 which discloses the teaching of a hand grab (36), see col 3, lines 71-71. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Black Jr et al to include the use of a hand grab mounted to the beam of his advantageous bridge plate as taught by Thompson '478 in order to facilitate rotation or handling of the bridge plate when the railroad cars are disconnected for service.”

## VII. Argument

### Grouping of Claims

The claims under appeal include independent claims 3, 13, 20, 24 and 33 and dependent claims 4-10, 12, 14, 15, 18, 23, 26 and 28-32. The claims do not rise or fall together.

## **Rejections Under 35 U.S.C. §102 - Anticipation**

### **Law of Anticipation**

Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention. *Structural Rubber Products Co., v. Park Rubber Co.*, 749 F.2d 7070; 223 U.S.P.Q. 1264 (C.A.F.C. 1984). The test for anticipation requires that all of the claimed elements must be found in exactly the same situation and united in the same way to perform the same function in a single unit of the prior art. *Studiengesellschaft Kohle, G.m.b.H. v. Dart Industries., Inc.*, 762 F.2d 724, 726, 220 U.S.P.Q. 841 at 842 (C.A.F.C. 1984). Anticipation cannot be predicated on teachings in a reference that are vague or based on conjecture. *Datascope Corp. v. SMEC Inc.*, 594 F. Supp. 1036; 224 U.S.P.Q. 694, 698 (D.N.J. 1984).

### **Commentary on Rejections Under 35 U.S.C. §102: US Patent 5,782,187 of Black, Jr.**

Claims 3-7, 9-10, 13-15, 20, 23, 24-26, 29-32 stand rejected as being anticipated by US Patent 5,782,187 of Black, Jr., et al.

The test for anticipation requires that the cited reference shows all of the elements of the claim in exactly the same situation and united in the same way to perform the same function. Consider, first, claim 3.

I) Claim 3 is premised on the existence of bridge plates that span the gap between the coupler ends of the two rail road cars. Black does not show this:

- (a) Black shows one railroad car, not two.
- (b) Black does not show the coupler ends of any railroad car.
- (c) Black does not show coupler end bridge plates.
- (d) Black does not show a gap between two coupled railroad cars.
- (e) Black does not show bridge plates spanning the gap between the coupler ends of two coupled railroad cars

The Applicant notes Black Jr., at col. 2, lines 50 - 64:

“The pivot plate assembly also may comprise *bridge plates for spanning the gap between the respective first and second units of the railway car*. The bridge plates provide supporting surfaces for rolling of vehicle over the articulation from one of the platforms to the other to facilitate rolling loading and unloading of vehicles from one unit to another.

The platforms may partially overlap the bridge plates to provide a continuous, uninterrupted movable support surface to be provided adjacent the articulation. Each of the platforms preferably comprises one or more molded polymeric structures having a ribbed bottom surface to provide light weight while maintaining high strength and rigidity.” (Emphasis added).

The key concept that does not seem to have been understood by the Examiner throughout this prosecution is that Black’s Figures 1 to 6 illustrate a portion of a single articulated rail road car.

#### The UMLER (Universal Machine Language Equipment Register)

The use of releasable knuckle couplers between rail road car body units is a defining criterion for determining whether there is more than one rail road car. If the units are releasably connected (i.e., separable at a knuckle coupler connection) then they are separate railroad cars. If they are not separable, as for example when joined by a type of permanent connection such as an articulated connector, then the multiple units are units of a single rail road car. This is an elementary definition in the industry, known to all persons skilled in the art.

This definition is reflected in the car registration number allocated in the Universal Machine Language Equipment Register, known throughout the industry as “The UMLER”. The UMLER is a computerized database in which all railroad cars are listed. It is used for registering cars, interchange acceptability, billing purposes, and so on. It may typically include the date built, GRL, equipped specialties, number of units in the car, length, width, height, and other information. The UMLER illustrates that a multi-unit car, like the rail road car of Black, Jr., is considered a single rail road car. For example, the car registration number format specification for a single unit rail road flat car is given in Section III, Format C. Data fields 42 and 43 specify the type of coupler at each of the car. See pages 44, 53 and 151 attached. If that flat car is a multi-unit car, the multi-unit car will have a single, unique UMLER number (say TTAX 220412), with the car information being reported under that number. The units of that single car are then labeled A, B, C, etc., (TTAX 220412A being the A end unit, 220412B being the B end unit, and so on). The unit number for an articulated multi-unit car is given in The UMLER in Section VII, Primary Format C. Data Number 6 shows the unit labeling for each unit of an articulated multi-unit car. See pages 103-104. It is difficult to imagine that there is a single person skilled in the art in North America who would not be familiar with the

UMLER. The complete UMLER specification can be found at the internet website identified as: [http://www.railinc.com/docs/umler\\_data\\_spec\\_manual.pdf](http://www.railinc.com/docs/umler_data_spec_manual.pdf).

By definition, an articulated railroad car (singular) has two or more rail road car body units (plural). The individual body units are not separate railroad cars.

Black shows an internal portion of a rail road car (singular).

Black's rail road car (singular) includes item **22a** and item **22b**, namely a pair of first and second rail road car units (plural) of Black's rail road car (i.e., "*of the railway car*", the definite article "the" being employed by Black). Hence, in clear contradiction of the Examiner's position, Black Jr., et al., clearly state that the bridge plates span the gap between "*the respective first and second units* (plural) *of the railway car* (singular).

The Applicant respectfully submits that the Black, Jr. reference does not support the rejection in the Office Action. On the contrary, it supports the position of the Applicant.

- (a) Black does not, in any Figure, illustrate a coupler end of any railroad car.  
Black does refer to the internal articulated connection of a single articulated railroad car.
- (b) Black does not, in any Figure, illustrate two rail road cars coupled together.  
Black does show portions of two rail car units of a single articulated railroad car.
- (c) Black does not, in any Figure, show bridge plates spanning the gap between the coupler ends of two rail road cars.  
Black does show internal bridge plates spanning the internal gap at the articulated connector.

The applicant respectfully submits that any one of these grounds would be sufficient to overcome the present rejection under 35 U.S.C. §102.

#### Office Action Contradicts the Reference

The cited Black, Jr. reference shows permanently mounted bridge plates located between two car units of a single articulated rail road car. The aspects of the invention presently claimed relate to a bridge plate for use at the coupled end of a rail road car, to span the gap between vehicle decks at the couplers. The background of the invention at page 4, lines 21 - 34, notes that the internal bridge plates mounted at a permanent articulated connector of an articulated rail road car face different design criteria and operating requirements than bridge plates at the coupler ends.

The figures of Black, Jr. cited by the Examiner, do not reveal anything about coupler end bridge plates. The Abstract makes no reference to coupler end bridge plates, but rather makes it abundantly



clear that the bridge plates cited by the Examiner are “over the articulation between interconnected railway car units”. Black, Jr. repeatedly states that the bridge plates are mounted between pivotally interconnected units, supporting the argument presented by the Applicant.

In this regard, the applicant specifically notes that the descriptions starting in the Office Action mailed October 18, 2002, and continuing through the following Office Actions of May 13, 2003, December 24, 2003, May 17, 2004, and December 13, 2004 have repeatedly, and incorrectly stated that Black, Jr., shows “...said bridge plate (32) comprising a beam locatable in a longitudinal orientation of sufficient length to span a gap between a pair of adjacent railroad cars (22a, 22b), ...”

As the Applicant has repeatedly pointed out, the foregoing statement flatly contradicts the text of the cited Black Jr. reference in this regard. Items **22a** and **22b** are not adjacent rail road cars. On the contrary, car units **22a** and **22b** are units of a single articulated rail road car, **22** as plainly indicated by Black, Jr. at, for example, col. 4, lines 1-7. The Examiner’s attention has been repeatedly drawn to Figures **1** and **2** of Black, Jr., which show a single shared railway truck supporting the adjacent internal ends of the two permanently interconnected units **22a** and **22b**.

The Office Actions to date in this matter:

- 1) Do not acknowledge that Black items **22a** and **22b** are units of a single articulated railroad car, not two railroad cars.
- 2) Do not acknowledge that Black does not show coupler end bridge plates.
- 3) Do not acknowledge that Black item **32** is not a coupler end bridge plate.
- 4) Do not acknowledge that the Examiner’s statement contradicts the reference.

These points have been clearly, and repeatedly, raised by the Applicant.

II) Claim 3 is premised on the idea that the bridge plate can be disengaged from the coupler end of the second rail road car. There is nothing in Black, Jr., that shows this capability.

The former argument concerning “proper tooling” has now, apparently, been abandoned. However, in the Office Action of May 17, 2004, it was asserted that, since Black’s internal bridge plates are secured by a bolt “[t]he connection is such that the bridge plate beam is disengageable from the railroad car whenever needed, as explained above as shown in fig. 8 since the bridge plate is secured by bolt 105. (See page 8, paragraph 8 of the December 13, 2004 Office Action)”.

The Applicant disagrees. Black’s internal bridge plates are not shown to be “disengageable”

within any reasonable interpretation of the claim language. Consider Black's Figures 1, 2 and 4, and col. 9, lines 50 – 60. How can plates 34 be lifted off studs 102 as long as platforms 30a and 30b are in place, given the physical relationship between decks 44, plates 32, studs 102, platforms 30a and 30b, and wear bars 110, 112 and 114? Clearly, to “disengage” plates 34, as suggested in the rejections, it appears that platforms 30a and 30b must also be removed. *But platforms 30a and 30b are Black's invention!*

The Applicant submits that it would be inherently contradictory for there to be a clear teaching in Black, Jr., to dismantle the very invention that Black teaches, and claims. A rejection that relies on dismantling part, or all, of the claimed invention taught by the reference cannot be sound. (See: *In re Gordon*, infra). As such, the Applicant again submits that a person skilled in the art would recognize the Black Jr., structure as being one intended to be permanent, rather than “disengageable”.

The law requires that references be read (a) as a whole; and (b) through the eyes of a person skilled in the art. There is no indication in Black, let alone a clear teaching, that the parts are intended to be taken apart after they have been assembled, nor is there any indication that, as an ordinary incident of the normal course of daily operation by railyard personnel that they are intended to be taken apart, nor that it is desirable for them to be taken apart, as the rejection so casually and blissfully appears to suggest by stating that the internal bridge plates are “... disengageable from the railroad car *whenever needed...*” (Emphasis added) (See page 8, paragraph 2 of the December 13, 2004 Office Action).

At a permanent articulation over a shared truck?

Black shows, *and claims*, an articulated railway car having a pivot plate assembly for spanning the articulation between two adjoining units of a single articulated railroad car. (See the parent case, US P 5,657,698 of Black, Jr., et al., issued August 19, 1997, claim 1, for example). It is clearly intended to be employed on a permanent or substantially permanent basis. The Applicant has enclosed a copy of an excerpt from Appendix A of the AAR Interchange Rules, p.95, at which “Articulated Car” is defined: “A multi-unit car which is *permanently connected* by articulated connectors supported by a shared truck and identified by a single car number.” (Emphasis added. The “car number” to which the definition refers is the UMLER number).

The Applicant previously requested that, if this ground of rejection were repeated, there be a demonstration, by column and line number or by Figure and item number, where in the Black reference there is *any* indication (let alone a clear teaching as required) that the features identified by the

Examiner are (a) intended to be taken apart after assembly; or (b) are intended to be dismantled as an ordinary incident of operation to permit plates **32** to be disengaged. No such demonstration has been provided. This issue is not whether an assembly can, after sufficient destructive effort, be taken apart. The issue is whether a person skilled in the art would understand the term “disengageable” to include the disassembly of the permanently attached equipment of Black.

The former assertion relied on conjecture that the structure was “disengageable”, contrary to *Datascope*, supra. The current assertion is no less so. Anticipation requires a clear showing in the art. The current rejection relies on information that is not supplied by Black Jr., namely a teaching to dismantle Black’s own invention, and, accordingly, the rejection cannot stand.

### III) Cross-wise Orientation

Claim 3 is premised on the idea that the bridge plate can be moved from a longitudinal orientation to a cross-wise orientation. There is nothing in Black that suggests that Black’s internal plates are, ever have been, ever will be, or were ever intended to be, movable between a longitudinal position and a cross-wise position. On the contrary, the relationship of deck **44**, platforms **30**, plates **32**, and wear bars **110**, **112** and **114** would seem to preclude movement to a cross-wise orientation. Therefore it cannot reasonably be said that Black Jr., shows a bridge plate having a fitting permitting movement from a longitudinal orientation to a cross-wise orientation.

In the event that this Appeal should be rejected, the Applicant respectfully requests a detailed explanation of how plates **32** could ever be moved to a cross-wise orientation given the physical relationship of items **44**, **30**, **32**, **110**, **112** and **114**.

The Office Action of December 13, 2004 states at page 8, under paragraph 3, "In response to applicant's argument No. 3, it must be recognized that the bridge plates are fully capable of moving from a longitudinal orientation to a crosswise orientation and this is accomplished when the railcars travel through a curve."

The Applicant respectfully disagrees. Applicant believes that the car shown and described in Black Jr., is shown at page 20 of the *1997 Car and Locomotive Cyclopedia* (copy enclosed). The distance shown between truck centers is 58’ – 0”. For Black’s car, the worst case design criterion is the 180 ft radius curve, as set forth in the American Association of Railroads (AAR) standard M-1001, p. C-II-16, paragraph 2.1.4.2.2. (copy enclosed). On a 180 ft radius curve, this would yield an

angular yaw deflection of the internal bridge plates of slightly less than 10 degrees of arc. The Applicant respectfully submits that a yaw deflection of less than 10 degrees cannot in any reasonable sense be equated with the bridge plate being in a "cross-wise orientation": notwithstanding a small angular yawing displacement, the bridge plate would still clearly remain in a longitudinal, or lengthwise orientation.

Therefore, and contrary to the assertion in the Office Action, even under the most severe design condition, the bridge plates of Black do *not* move to a crosswise orientation as the railcars travel through a curve.

In summary, the present rejection relies not merely on (a) an unwarranted assumption of the ability to dismantle Black's apparatus, but, additionally, on (b) the assumption that Black's apparatus is *intended* to be dismantled in the ordinary course; on (c) the assumption that a person skilled in the art would *infer* the ability to dismantle Black's apparatus, on (d) the assumption that a person skilled in the art would *infer* that Black's apparatus is intended to be dismantled as an ordinary incident of operation; on (e) the assumption that a person skilled in the art would infer the *desirability* of being able to dismantle Black's apparatus; and finally on (f) the assumption that the person skilled in the art would *construe* all of these things to mean "disengageable".

The Applicant respectfully submits that a rejection made on this basis clearly does not satisfy the test for anticipation under 35 U.S.C. §102. The Applicant submits that none of the rejections of claim 3 or any claim dependent from claim 3, made under 35 U.S.C. §102 on the basis of US Patent 5,782,187 of Black, Jr., et al., are supportable. The Applicant respectfully requests that the rejections be reconsidered and withdrawn.

#### Reply Commentary in Office Action of December 13, 2004

The Reply commentary of the Office Action of December 13, 2004 makes a number of comments in connection with the Applicant's arguments as stated above.

(i) With regard to the fact that Black shows one railroad car, not two, the Office action states:

"Applicant's argument that Black Jr., et al., only show a single articulated railroad car is weak since Black Jr., et al., reference clearly disclose articulated railcar units with separate cars that are coupled at their ends by the bridge plate members (32) and which decouples at various points in

time. Contrary to applicant's contention, the rail car units are not permanently attached. The lack of a geeny or pivoting knuckle coupler at the end of the railcars is irrelevant ..."

The Applicant disagrees.

First, as noted above, the definition applied by the Applicant is in accord with the understanding of persons skilled in the art, and the UMLER. The commentary in the Office Action clearly diverges from the meaning of "railroad car" as understood by persons skilled in the art. No Office Action to date in this matter has identified any support in the objective art of record for the use of a definition that is at odds with the UMLER.

Second, the rejection has been made under 35 USC 102. Whether or not the argument is considered to be "weak", the fact is that the reference does not show two railroad cars. It shows a single, articulated railroad car. That, in itself, is sufficient to overcome a rejection under 35 USC 102, whether it is considered "weak" or not.

Similarly, the Applicant respectfully submits that a 35 USC 102 rejection cannot be established by asserting that claim language is "irrelevant". Either the reference shows the features, or it doesn't. The claim refers to "a pair of longitudinally coupled rail road cars". If there are two cars, then there must be a set of releasable knuckle couplers. Therefore, coupler ends are required, not internal ends. Either the reference does, or it does not show "a rail road car bridge plate" that includes "a beam locatable in a longitudinal orientation relative to the railroad cars to span a gap therebetween"... There is nothing in Black Jr., that shows (a) two cars; (b) two cars coupled together; or (c) any such beam.

Third, it is obvious by inspection that if one tries to separate the two car units of Black's articulated rail road car of Figures 1 and 2 that one of the units will have an unsupported end. That unsupported end has no choice but to drag on the ground. It is therefore not true that Black shows two "separate railroad cars".

Fourth, it is trite law that patent specifications are addressed to persons skilled in the art and having a mind willing to understand. It is also trite law that the Applicant is entitled to be his or her own lexicographer. In this industry, in this context used in the present specification, to say that two rail road cars are "coupled" together, is clearly understood to mean coupled at the releasable knuckle couplers, or more commonly, simply "the couplers", at the ends of the car. To the extent that an interpretation deviates from the notoriously well known meanings of commonplace terms in the art,

the onus lies on the Commissioner to provide objective evidence of record to support that interpretation. No such evidence has been advanced to date.

Fifth, contrary to the statement in the Office Action, the car units are not "... coupled at their ends by the bridge plates members (32)...".

Railroad cars are required to withstand a draft load of at least 350,000 pounds (see AAR standard M-1001, p. C-II-53, para. 4.1.8, copy enclosed); a buff load of at least one million pounds (see M-1001, p. C-II-54, para. 4.1.9, copy enclosed); and an impact load in compressions along the coupler centerline of 1,250,000 pounds (see M-1001, p. C-II-54, para. 4.1.10.1, copy enclosed). Black indicates that the internal bridge plates **32** and platforms **30** are preferably made of a polymeric material. (Col. 2, lines 60 – 64; col. 10, lines 40 – 41). Clearly, polymeric bridge plates are not being used to provide a load path for a 1 million pound squeeze load or a 1,250,000 pound impact load – an observation amply supported by the location of the studs **102a**, **102b** in the slots **106a**, **106b** depicted in Black Figure 5, and by the very existence, and positioning, of the shared truck shown in Black Figures 1 and 2.

V) Claim 13 and Claims 14 - 15 Dependent Therefrom

In the context of Claim 13, as applicable, the Applicant repeats the commentary made above in the context of Claim 3 and all claims dependent therefrom. There is no enabling disclosure in Black, Jr., of a bridge plate for spanning a lengthwise gap between corresponding vehicle decks of a pair of first and second releasably coupled rail road cars, let alone where the bridge plates are disengageable from the adjacent railroad car. The Applicant respectfully requests that the rejections of claims 13 to 15 under 35 U.S.C. §102 in light of Black be reconsidered and withdrawn.

VI) Claims 20 and 23

In the context of Claims 20 and 23, to the extent applicable, the applicant repeats the commentary made above in the context of Claim 3 and all claims dependent therefrom. There is no enabling disclosure in Black, Jr., of a bridge plate for spanning the gap at the coupler ends between first and second releasably coupled rail road cars, let alone such a plate in which the bridge plate is disengageable from the adjacent railroad car. The applicant respectfully requests that the rejections of claims 20 and 23 under 35 U.S.C. §102 in light of Black be reconsidered and withdrawn.

VII) Claim 24 and claim 25, 26 and 29 - 32 dependent therefrom

In the context of Claims 24, 25, 26 and 29 - 32, to the extent applicable, the applicant repeats the commentary made above in the context of Claim 3 and all claims dependent therefrom.

Specifically, there is no enabling disclosure in Black of bridge plates at the coupler ends of two railroad cars in which the bridge plates are disengageable from the adjacent railroad car. The applicant respectfully requests that the rejections of claims 24 - 26 and 29 - 32 under 35 U.S.C. §102 in light of Black be reconsidered and withdrawn.

### **Claim Rejections Under 35 U.S.C. §103**

#### **Statement of the Law**

- (a) **MPEP Section 2142: Basic Requirements of a *Prima Facie* Case of Obviousness**  
Section 2142 of the Manual of Patent Examining Procedure (MPEP) states:

#### **ESTABLISHING A *PRIMA FACIE* CASE OF OBVIOUSNESS**

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on the applicant’s disclosure. *In re Vaeck*, 947 F. 2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

- (b) **Mere Possibility of Combination is Not Sufficient**

Section 2143.01 of the Manual of Patent Examining Procedure (MPEP) states:

#### **FACT THAT REFERENCES CAN BE COMBINED OR MODIFIED IS NOT SUFFICIENT TO ESTABLISH *PRIMA FACIE* OBVIOUSNESS**

“The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)

- (c) **Must Have Teaching, Suggestion, or Incentive to Combine**

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention *absent some teaching, suggestion or incentive* supporting the combination *ACS Hospital Systems Inc. v. Montefiore Hospital*, 732 F. 2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir., 1984.). Cited in *In re Geiger*, 815 F.2d at 688, 2 U.S.P.Q.2d at 1268 (Fed. Cir. 1987) (Emphasis added). See also *In re Lee*, (61 U.S.P.Q. 2d 1430, 277 F.3d 1338 (CAFC, 2002)).

Obviousness cannot be established by combining references without also providing objective evidence of the motivating force that would impel one skilled in the art to do what the patent applicant has done (See *In Re Lee*, *infra*; see also *Ex Parte Levengood*, 28 U.S.P.Q.2d 1300, 1302 (Bd. Pat. App. & Inter. 1993)).

(d) Inquiry Must Present a Convincing Line of Reasoning

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. “To support the conclusion that the claimed invention is directed toward obvious subject matter, either the references must expressly or impliedly, suggest the claimed invention or *the examiner must present a convincing line of reasoning* as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Ex Parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985) (Emphasis added).

...

When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper. *Ex Parte Skinner*, 2 U.S.P.Q.2d 1788 (Bd. Pat. App. & Inter. 1986).”

(e) Inquiry Must Be Thorough And Searching

“The factual enquiry whether to combine the references must be thorough and searching. *Id.*, It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. ...

“The need for specificity pervades this authority. See e.g.,

“*In re Kotzab* 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.”);

*In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2d 1453, 1459 (Fed. Cir. 1998) (“even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.”);

*In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992) (The examiner can satisfy the burden of showing obviousness of the combination “only by showing some objective teaching in the prior art or that knowledge generally



available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references”).”

(*In re Lee*, 61 U.S.P.Q.2d 1430, 277 F.3d 1338, (CAFC, 2002). Emphasis and paragraph division added.)

Conclusory statements by an examiner do not adequately address the issue of motivation to combine. ( *In re Lee*, *supra*).

(f) “Would have been obvious to one skilled in the art”

The MPEP requires that the examiner provide an objective source of support for a contention that a feature is known or obvious to one skilled in the art. An unsupported statement that a feature or combination “would have been obvious to one skilled in the art” is improper if made without support. *In re Lee*, *supra*, and *In re Garrett* 132 U.S.P.Q. 514 (Pat. Off. Bd. App. 1961).

A statement that modifications of the prior art to meet the claimed invention would have been “well within the ordinary skill of the art at the time the claimed invention was made because references relied upon teach that all aspects of the claimed invention were individually known in the art” is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). See also *Al-site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d 1161 (Fed. Cir. 1999) (The level of skill in the art cannot be relied upon to provide suggestion to combine references).

(g) Destruction of Function

“If proposed modifications would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)

**Claim Rejections Under 35 U.S.C. §103: Claim 8**

US Patent 5,782,187 of Black, Jr. and US Patent 5,836,028 of Petersen

The Applicant traverses the new rejection of claim 8 on the basis of Black Jr., in view of Petersen. Claim 8 depends from claim 7, which in turn depends from claim 3. To the extent that either of those claims is allowable, the Applicant respectfully submits that claim 8 is also allowable. Further, the Applicant notes that the Petersen reference has nothing to do with the railcar field. The Office Action does not appear to identify any specific feature or statement in either the Petersen or Black Jr., references to demonstrate a nexus between the references from which the suggestion, motivation, or

incentive to make the proposed combination is derived. In the event that this rejection is maintained, the Applicant respectfully requests that a source of motivation to combine or modify be demonstrated explicitly in the objective evidence of record in this matter as required under *In re Lee*.

### **Claim Rejections Under 35 U.S.C. §103: Claims 12, 18 and 28**

#### **US Patent 5,782,187 of Black, Jr., and US Patent 3,195,478 of Thompson**

The Examiner has cited the combination of Black, Jr., et al., and Thompson, against claims 12, 18 and 28. According to the Office Action, Black teaches all of the limitations of claims 12, 18 and 28 except for a railroad car bridge plate having a handgrab mounted thereto.

#### **US Patent 3,195,478 of Thompson**

The Examiner again contends that it would have been obvious to one of ordinary skill in the art to modify the bridge plate of Black, Jr., et al., to include the use of a handgrab as taught by Thompson.

As a preliminary matter, for the reasons discussed above, the applicant traverses the contention that Black teaches all of the limitations of claims 12, 18 and 28 except a handgrab. However, even if it were true, (which it is not), the rejection would fail for lack of motivation, suggestion or incentive to combine.

Thompson has a handle to permit Thompson's bridge plate to be raised and lowered between "a loading position and a transit position" (Thompson col. 2, lines 14 - 21: "It is an object of the present invention to provide ... a bridge plate ... at the end of the flat car ... which bridge plates are adapted to be swung from a loading position to a transit position." (*i.e.*, the loading position, across the gap, is not the transit position - the antithesis of staying in place during transit).

#### **Black, Jr. and Thompson: References Teach in Opposite Directions**

Even in the Examiner's own characterisation of Black Jr. (which the applicant traverses), Black Jr. shows bridge plates, albeit internal bridge plates rather than coupler end bridge plates, that stay in place during train operation. The purpose of the handgrab in Thompson is to facilitate the movement of the bridge plate between the horizontal loading position and the vertical transit position. Thompson (a) shows; (b) includes in the objects of his invention; and (c) claims, bridge plates that are to be raised to a vertical position for transit. The references thus teach in opposite directions. The Applicant respectfully submits that where references teach in opposite directions there is no suggestion, motivation, or incentive to combine, and *prima facie* grounds for rejection have not been established.

Office Action Commentary

Notwithstanding this, the Office Action presumes that someone would want to use Thompson's handgrabs would in Black's apparatus to "facilitate rotation of [Black's] bridge plate", *i.e.*, item **32**.

Interesting as this conjecture may be, it fails to address the more basic question: why would anybody need or want to rotate Black's plates in the first place? Given that Black's plates are apparently intended to stay in place spanning the articulation between two rail car units during operation, what would Thompson's hand grabs be used for? Suppose there are two choices: (1) the handle can be used to rotate the bridge plate upwardly; or (2) the handle could be used to swing the plate horizontally.

The first choice is not a tenable explanation: Even though Thompson's teaches the use of handgrabs for swinging the plate to a vertical position for transit, Black's plates are sandwiched between the underlying decks **44** of the railway car units and the overlying platforms **30a** and **30b**, so the plates can't be raised, anyhow, except by removing Black's own invention.

The second choice is also untenable. Handle or no handle, the yaw position of plates **32** is dictated by the relationship of studs **102a**, **102b** and slots **106a**, **106b**. There is nothing in Thompson that suggests using handgrabs to pivot plates **34** sideways, and there is nothing in Black, Jr., to suggest a reason why anybody would ever need or want to rotate plates **34** by hand at all.

The Office Action of December 13, 2004, by way of reply, suggests "A person of ordinary skill in the art would have been motivated to incorporate the handle of Thompson into Black Jr., et al for the purpose of rotating the bridge plate out of position during service of the railroad cars and come up with the claimed invention."

Even were this true, where, in the objective art of record in this case is any such statement supported, as required by *In re Lee*? What kind of servicing would prompt this need for rotation? Where is that indicated in the reference? Where is the explanation in the objective art of record of why Black's apparently permanently mounted internal bridge plates would ever require, or benefit from having, a handgrab?

The Applicant submits that a person of ordinary skill in the art would not be motivated to modify Black, Jr., to include the use of a handgrab, whether Thompson's or anybody else's, since this modification would not appear to provide any advantage to the Black, Jr., et al., apparatus. The

Applicant respectfully submits that the reply commentary in the Office Action of December 13, 2004 is conjecture that is wholly unsupported by the art of record in the case.

In summary, none of the Office Actions has identified a source in the objective art of record from which a person skilled in the art would infer there to be a suggestion, motivation, or incentive to combine Black and Thompson to arrive at the invention of any of claims 12, 18 and 28. As such no *prima facie* ground for rejection has been established under 35 U.S.C. §103. On that ground alone, if no other, the applicant respectfully submits that it is entitled to request withdrawal of the current rejection of claims 12, 18 and 28.

#### Impermissible Hindsight Analysis

The Applicant previously specifically requested, if this rejection were upheld, that, in accordance with *In Re Kotzab*, the Examiner demonstrate where in the objective art of record in this case, there is an explanation of why a person skilled in the art would be motivated to make the proposed combination. There has been no such reply provided. On the contrary, the reply commentary in the Office Action of December 13, 2004 states:

“... it should be noted that the combination rejection was simply based on a teaching of a handle that is disclosed by the prior art of record, Thompson, which disclose a handle attached to the side of a bridge plate for the purpose of moving the plate out of position.” (See page 9, paragraph 5 of the December 13, 2004 Office Action)

This is a clear admission that Thompson was cited purely on the basis of impermissible hindsight analysis, without any basis in the reference (or in any other objective art of record) for finding a suggestion, motivation or incentive for making the proposed combination. The Applicant respectfully submits that a rejection made on this basis is contrary to law and cannot stand.

#### Statements of The Law and Application of the Law

Previous Office Actions in this matter contained assertions of law that appear to have been without foundation in the statute, the regulations, or the case law. Indeed, the Applicant respectfully submitted that some of the statements were either incomprehensible, or directly contrary to the law. Since correct application of the law is fundamental to the examining process, the Applicant respectfully and explicitly requested specific clarification of those points.

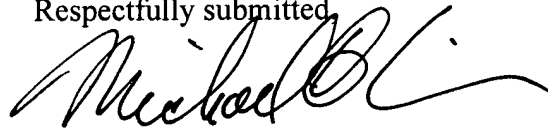
The Applicant requested a full explanation of those statements in the response to Office Action of August 26, 2002. The Applicant again requested an explanation of those statements in the Response to Office Action of March 18, 2003. For a third time, the Applicant requested an explanation in the Response to Office Action of November 12, 2003. For a fourth time, in the Response to Office Action of March 23, 2004, the Applicant requested a full explanation of the statements of the law formerly made by the Examiner. To date, no such explanation has been provided.

There is no evidence to show that the Office Actions apply the law, or attempt to apply the law, any differently than as formerly, and erroneously done. In the event that this appeal is rejected, either in whole or in part, the Applicant therefore respectfully requests either (a) an explanation of the former commentary; or (b) (i) an acknowledgement that the former statements of the law were incorrect; and (ii) a demonstrably correct application of the law, MPEP 2142, and *In re Lee* to the currently presented claims and the art of record in this matter.

#### Conclusion

In view of the foregoing arguments, the applicant submits that claims 3 - 46 presently pending in this case are in a condition to permit allowance. Therefore the applicant requests early and favourable disposition of this application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael H. Minns", with a stylized flourish at the end.

Michael H. Minns  
Reg. No. 31,985

Hahn Loeser + Parks LLP  
One GOJO Plaza  
Suite 300  
Akron, OH 44311-1076  
330-864-550  
Fax 330-864-7986

### **VIII. Claims Appendix**

1. (Cancelled).
2. (Cancelled).
3. (Previously Presented) A rail road car bridge plate operable to permit a vehicle to be conducted between respective vehicle decks of a pair of first and second longitudinally coupled rail road cars, said bridge plate comprising:
  - a beam locatable in a longitudinal orientation relative to the rail road cars to span a gap therebetween;
  - said beam having a surface upon which the vehicle can be conducted;
  - said beam having a fitting by which to mount said beam to the first of the rail road cars;
  - said fitting being operable to accommodate yawing of said beam relative to the first rail road car when said beam is located in the longitudinal orientation and the rail road cars are in motion; and
  - said fitting permitting movement of said beam from said longitudinal orientation to a cross-wise orientation relative to the first rail road car when said beam is disengaged from the second rail road car.
4. (Previously Presented) The bridge plate of claim 3 wherein said fitting is chosen from the set of fittings consisting of
  - (a) a collar for receiving a pivot pin; and
  - (b) a pivot pin engageable in a collar;by which said fitting permits motion of said bridge plate between an extended position spanning a gap between the rail road cars and a storage position.
5. (Previously Presented) The bridge plate of claim 3 wherein said fitting is a pivot fitting and, when said beam is lying horizontally, said pivot has a predominantly vertical axis.
6. (Previously Presented) The bridge plate of claim 3 wherein said beam has a flange defining said surface, and said fitting is a pivot fitting having a pivot axis perpendicular to said flange.
7. (Original) The bridge plate of claim 3 wherein said fitting is a pivot fitting having a pivot axis perpendicular to said surface.
8. (Original) The bridge plate of claim 7 wherein said surface has traction bars mounted thereto.

9. (Original) The bridge plate of claim 3 further comprising a second fitting, said second fitting being operable to engage a mating fitting of the second rail road car.

10. (Original) The bridge plate of claim 3 further comprising a second fitting operable to engage the second rail road car, said first fitting being a pivot fitting and said second fitting being a slide fitting.

12. (Original) The bridge plate of claim 3 wherein said beam has at least one hand grab mounted thereto to facilitate manipulation of said bridge plate.

13. (Previously Presented) A bridge plate for spanning a length-wise gap between corresponding vehicle decks of a pair of first and second releasably coupled rail road cars, said bridge plate comprising:

- a beam member for supporting the weight of a wheeled vehicle, said beam member having an upwardly facing surface upon which the vehicle can be conducted between the rail road cars, said beam having first and second ends;

- a first fitting for engaging the first rail road car;

- a second fitting for engaging the second rail road car;

- said first fitting being mountable to connect said first end of said beam to the first rail road car, said first fitting permitting pivotal motion of said bridge plate relative to the first rail road car about a first axis normal to said surface;

- said second fitting being mountable to connect said second end of said beam to the second rail road car, said second fitting permitting pivotal motion of said bridge plate relative to the second rail road car about a second axis normal to said surface;

- said second fitting being operable to accommodate variation of distance between the first and second axes while said rail road cars are coupled together and in motion and one of said first and second fittings being disengageable.

14. (Previously Presented) The bridge plate of claim 13 wherein, when the rail road cars are uncoupled, said second end of said bridge plate is disengageable from the second rail road car, and, when so disengaged, is movable about said first axis to a cross-wise storage position.

15. (Original) The bridge plate of claim 13 wherein said second fitting includes a slide capable of linear motion relative to the second axis.

18. (Original) The bridge plate of claim 13 wherein said second end of said beam has a handgrab to facilitate manipulation of said beam.

20. (Previously Presented) A bridge plate for spanning a gap between corresponding vehicle decks of a pair of first and second releasably coupled rail road cars, said bridge plate having:

- a first pivot fitting mountable to the first rail road car, said pivot fitting permitting pivotal motion of said bridge plate relative to the first rail road car about a first vertical axis;

- a second fitting for engaging the second rail road car, said second fitting including a linear extension member permitting pivotal motion of said bridge plate relative to a second vertical axis fixed relative to the second rail road car;

- said first fitting being tolerant of yaw motion of the bridge plate relative to the first rail road car when said first fitting is mounted thereto;

- said second fitting being disengageable relative to the second rail road car;

- said second fitting being tolerant of yaw motion of the bridge plate relative to the second rail road car when said second fitting is engaged thereto; and

- said linear extension member tolerating variation in distance between the first and second axes.

23. (Previously Presented) The bridge plate of claim 20 wherein said linear extension member is a slot defined in said beam.

24. (Previously Presented) A bridge plate kit for spanning a gap between respective vehicle decks of a pair of first and second releasably coupled rail road cars, said kit comprising:

- a bridge plate;

- a first pivot pin having a first pivot axis, said first pivot pin being mountable to the first rail road car with said first pivot axis in a vertical orientation;

- a second pivot pin having a second pivot axis, said second pivot pin being mountable to the second rail road car with said second pivot axis in a vertical orientation;

- and

- said bridge plate having

- a track surface upon which a vehicle can be conducted between the railroad cars when said bridge plate is mounted to span the gap;

- a first fitting in engagement with said first pivot pin, said bridge plate being pivotable relative to said first pivot axis;



a second fitting in engagement with said second pivot pin, said bridge plate being pivotable relative to said second axis;  
said bridge plate being translatable relative to said second axis; and  
one of said pivot pins being disengageable.

25. (Original) The bridge plate kit of claim 24 wherein said first fitting is a collar matable with said first pivot pin, and said second fitting is a guide matable with said second pivot pin.

26. (Original) The bridge plate kit of claim 24 wherein said bridge plate includes a beam member for supporting loads to be conducted between the first and second rail road cars, said first fitting is a collar mounted to said first pivot pin, and said second fitting is an elongated slot, said second pivot pin being seated in said slot.

28. (Original) The bridge plate kit of claim 24 wherein said second pivot pin is removable from the second mounting, and said bridge plate has hand grabs to facilitate pivoting of said bridge plate by hand about said first pivot pin.

29. (Previously Presented) The bridge plate kit of claim 24 wherein said kit includes two of said bridge plates, two of said first fittings and two of said second fittings whereby said bridge plates, when installed, co-operate as a pair of side-by-side wheel trackways to define a pathway between the first and second rail road cars.

30. (Previously Presented) The bridge plate kit of claim 24 wherein said disengageable one of said pivot pins is disengageable from its respective rail road car.

31. (Previously Presented) The bridge plate of claim 24 wherein said disengageable one of said pivot pins is removable disengageable from its respective fitting of said bridge plate.

32. (Previously Presented) The bridge plate of claim 24 wherein said second pivot pin is said disengageable pivot pin.

**IX. Evidence Appendix**

1. Universal Machine Language Equipment Register Data Specification Manual, December 1, 2002, cover page, pages 44, 45, 53, 103-105 and 151
2. 2005 Office Manual of the AAR Interchange Rules, Appendix A, p.95, definition of “Articulated Car”
3. *1997 Car and Locomotive Cyclopedia*, p. 20
4. AAR Standard M – 1001, Association of American Railroads, Mechanical Division, Manual of Standards and Recommended Practices, p. C-II-53, paragraph 4.1.8
5. AAR Standard M – 1001, Association of American Railroads, Mechanical Division, Manual of Standards and Recommended Practices, p. C-II-54, paragraph 4.1.9
6. AAR Standard M – 1001, Association of American Railroads, Mechanical Division, Manual of Standards and Recommended Practices, p. C-II-54, paragraph 4.1.10.1
7. AAR Standard M – 1001, Association of American Railroads, Mechanical Division, Manual of Standards and Recommended Practices, p. C-II-16, paragraph 2.1.4.2.2.

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**Business Services Division**  
**Interline Service - UMLER**

**DATA  
SPECIFICATION  
MANUAL**

**Effective DECEMBER 1, 2002**

Copyright Operations & Maintenance Department, Association of American Railroads, 1996

Flat and Maintenance of Way Flat Cars				SECTION III Format C	Data Layout Summary, effective: 12/1/2002	
Data No.	Field Positions Starting-Ending	Field Length	Equipment Type	Description	Line	Positions
29	119-122	4	Flat	Inside Platform Length	2	37-40
30	123-126	4	Flat	Inside Platform Width	2	41-44
31	127-130	4	Flat	Outside Dimensions--Plat. Hgt. Above Rail	2	45-48
32	127-130	4	Wheelsets Q8	Height of Bogie	2	45-48
33	131-134	4	Flat	Bulkhead or Container--Top Width	2	49-52
34	135-138	4	Flat	Bulkhead or Container--Hgt. Above Plat. Well or Depressed Flat--Height of Platform	2	53-56
35	139-142	4	Flat	Inset Stake Pockets--Platform Width	2	57-60
36	143-146	4	Flat	Inset Stake Pockets--Platform Length	2	61-64
37	147-150	4	Flat	Well or Depressed Flat--Bottom Width	2	65-68
38	151-154	4	Flat	Well or Depressed Flat--Bottom Length	2	69-72
39	155-158	4	Flat	Well or Depressed Flat--Top Width	2	73-76
40	159-162	4	Flat	Well or Depressed Flat--Top Length	2	77-80
41	163-166	4	Flat (Multi-Level)	Top Deck Height No Roof	2	81-84
42	167-174	8	Flat	Coupler A-End	2	85-92
43	175-182	8	Flat	Coupler B-End	2	93-100
44	183-187	5	Flat	Cubic Feet Capacity-Actual	3	19-23
45	188-190	3	Flat	Zeros	3	24-26
46	191-194	4	Flat	Tare Weight (00) *	3	27-30
47	195-198	4	Flat	Weighing Road	3	31-34
48	199-204	6	Flat	Weighing Date (Mo-Day-Yr)	3	35-40
49	205-207	3	Flat	Total Allowable Weight on Rail (000) *	3	41-43
50	208-208	1	Flat	Star Code *	3	44
51	209-212	4	Flat	Truck Center Length *	3	45-48
52	213-213	1	Flat	Bearing & Brake Shoe Type *	3	49
53	214-214	1	Flat	Axles *	3	50
54	215-215	1	Flat	Truck Type & Axle Spacing WWO Stability Device	3	51
55	216-216	1	Flat	Wheel Size *	3	52
56	217-218	2	Flat	Draft Gear/Coupler	3	53-54
57	219-221	3	Flat	Center of Gravity (Empty Car) *	3	55-57

(\* Denotes mandatory fields for Maintenance-of-Way Cars)

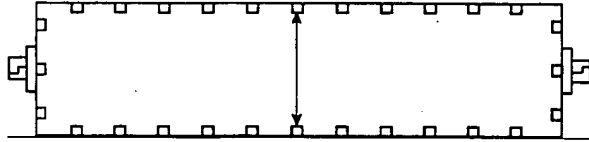
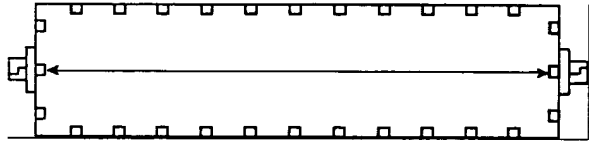
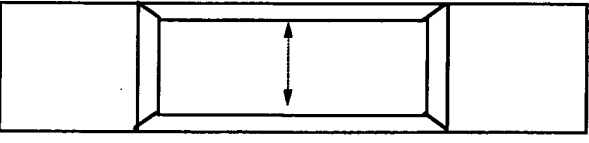
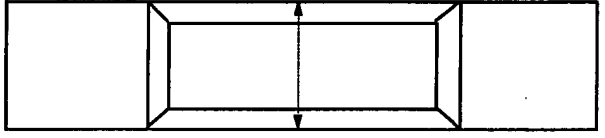
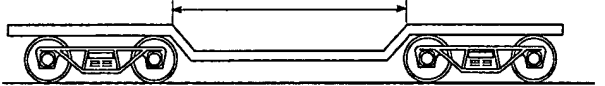
Copyright Operations & Maintenance Department, Association of American Railroads, 1996

## SECTION III

## Format C: Flat and Maintenance of Way Flat Cars

## Format C

Data Layout Detail, effective: 12/1/2002

Data No.	Field Positions Field Description	Line Positions [Equipment Type]	Data No.	Field Positions Field Description	Line Positions [Equipment Type]
36	143-146	2	61-64		
Inset Stake Pockets--Platform Length [ Flat ]					
<p>Numeric, report zeros unless car has inset stake pockets. Then the measurement is between the insides of the end stake pockets. Feet in Pos. 61-62, inches in Pos. 63-64. Round fraction to the lower inch, e.g., 05 3/4" = 05.</p> <p>MINIMUM--20 00      MAXIMUM--99 11</p> <p>Top View of Car:</p> 					
37	147-150	2	65-68		
Well or Depressed Flat--Bottom Width [ Flat ]					
<p>Numeric, zero unless depressed car (Equipment Type Code F_3_, F_9_) or well car (Equipment Type Code F_6_). Feet in Pos. 65-66, inches in Pos. 67-68. Round fraction to the lower inch, e.g., 05 3/4" = 05. See diagram below.</p> <p>MINIMUM--03 11      MAXIMUM--10 11</p> 					
38	151-154	2	69-72		
Well or Depressed Flat--Bottom Length [ Flat ]					
<p>Numeric, zeros unless depressed car (Equipment Type Code F_3_, F_9_) or well car (Equipment Type Code F_6_). Feet in Pos. 69-70, inches in Pos. 71-72. Round fraction to the lower inch, e.g., 05 3/4" = 05.</p> <p>MINIMUM--07 06      MAXIMUM--56 11</p> 					
39	155-158	2	73-76		
Well or Depressed Flat--Top Width [ Flat ]					
<p>Numeric, zeros unless depressed cars (Equipment Type Code F_3_, F_9_) and well cars (Equipment Type Code F_6_) only. Feet in Pos. 73-74, inches in Pos. 75-76. Round fraction to the lower inch, e.g., 05 3/4" = 05. Measure as shown in diagram below.</p> <p>MINIMUM--03 08      MAXIMUM--11 11</p> <p>Top View of Car:</p> 					
40	159-162	2	77-80		
Well or Depressed Flat--Top Length [ Flat ]					
<p>Numeric, zeros unless depressed cars (Equipment Type Code F_3_, F_9_) and well cars (Equipment Type Code F_6_) only. Feet in Pos. 77-78, inches in Pos. 79-80. Round fraction to the lower inch, e.g., 05 1/4" = 05.</p> <p>MINIMUM--14 00      MAXIMUM--61 11</p> 					
41	163-166	2	81-84		
Top Deck Height No Roof [ Flat (Multi-Level) ]					
<p>Numeric, measurement from the top of rail to top deck on which vehicles are loaded. Feet in Pos. 81-82, inches in Pos. 83-84 for V3_, and V8_ without roof, if the rack has a roof report zeros. Do not report V0_ - V2_, V4_ - V7_ and V9_.</p> <p>V3_    MINIMUM - 1206      MAXIMUM - 1406 V8_    MINIMUM - 0900      MAXIMUM - 1103</p>					
42	167-174	2	85-92		
Coupler A-End [ Flat ]					
<p>Alphanumeric code to describe type of coupler installed on each end of car (for both A and B ends). See Exhibit V, Section IX for valid coupler codes.</p> <p>NOTE: Mandatory for all cars built or rebuilt on July 1, 1997 and subsequent. For cars built or rebuilt prior to July 1, 1997, blanks can be reported if the information is not available.</p>					
43	175-182	2	93-100		
Coupler B-End [ Flat ]					
<p>Alphanumeric code to describe type of coupler installed on each end of car (for both A and B ends). See Exhibit V, Section IX for valid coupler codes.</p> <p>NOTE: Mandatory for all cars built or rebuilt on July 1, 1997 and subsequent. Effective July 1, 2000, mandatory for all cars. In the interim blanks can be reported.</p>					

## SECTION VII

## Primary Format B

## Articulated Transaction for Tank Cars

Data Layout Detail, effective: 12/1/2002

Data No.	Field Positions Field Description	Line Positions (Equipment Type)	Data No.	Field Positions Field Description	Line Positions (Equipment Type)
CO	91st unit from B-end; next to "CN" unit		(Data No. 76).		
CP	92nd unit from B-end; next to "CO" unit			Minimum	Maximum
CQ	93rd unit from B-end; next to "CP" unit				
CR	94th unit from B-end; next to "CQ" unit		Tank Cars	0310	2000
CS	95th unit from B-end; next to "CR" unit		NOTE: Edit parameters above are applicable for cars with Star Codes 'S' or 'R'.		
CT	96th unit from B-end; next to "CS" unit				
CU	97th unit from B-end; next to "CT" unit				
<b>7</b>	<b>21-21</b>	<b>U 21</b>	<b>13</b>	<b>42-46</b>	<b>U 42-46</b>
<b>Equipment Type Code Prefix</b> [Tank]			<b>Actual Shell Capacity</b> [Tank]		
Alphabetic, report the alpha prefix of the Equipment Type Code. T = Tank car. If Maintenance-of-Way tank, report 'T'.			Numeric, report the Actual Shell Capacity for the individual unit.		
<b>8</b>	<b>22-25</b>	<b>U 22-25</b>	NOTE: Unit with Major Class 17, 58 or 77 should report zeros (000000).		
<b>Prior Unit Initial</b> [Tank]			MINIMUM	MAXIMUM	
			02000	49000	
Alphanumeric, report the PRIOR reporting mark of the unit.			<b>14</b>	<b>47-47</b>	<b>U 47</b>
NOTE: This field may be left BLANK. No Equipment Identification Numbers (EIN) will be assigned to articulated units at this time. If reported, owner must provide valid reporting initial of the prior unit, NEWX or ARXX.			<b>Compartments</b> [Tank]		
<b>9</b>	<b>26-31</b>	<b>U 26-31</b>	Alphanumeric, report the number of Compartments for the individual unit.		
<b>Prior Unit Number</b> [Tank]			NOTE: Units with Major Class 03, 58 or 77 should report a BLANK.		
			MINIMUM	MAXIMUM	
			1	5	
Alphanumeric, report the PRIOR unit number of the unit.			<b>15</b>	<b>48-100</b>	<b>U 48-100</b>
NOTE: This field may be left BLANK. No Equipment Identification Numbers (EIN) will be assigned to articulated units at this time. If reported, owner must provide valid number of the prior unit. If Prior Unit Initial is NEWX or ARXX, Prior Unit Number should be zeros (000000).			<b>Blank</b> [Tank]		
<b>10</b>	<b>32-33</b>	<b>U 32-33</b>	Blank		
<b>Prior Unit Position</b> [Tank]					
Alphanumeric, RIGHT JUSTIFIED report the code that identifies the PRIOR unit within the articulated/multi-unit set. See Unit Position in Data No. 6 for valid codes.					
NOTE: This field may be left BLANK. No Equipment Identification Numbers (EIN) will be assigned to articulated units at this time. If reported, owner must provide valid unit position of the prior unit.					
<b>11</b>	<b>34-37</b>	<b>U 34-37</b>			
<b>Load Limit</b> [Tank]					
Numeric, report in hundreds of pounds the stencilled load limit of each unit in the set. The load limit is the maximum permissible weight that can be loaded on the unit. The value is determined by deducting the unit's light weight (tare) from the total allowable weight on rail for the applicable journal size as defined in AAR Interchange Rule 70. The value can be equal to or greater than the car's reported nominal capacity. The number of units reported must agree relationally with the Articulated field in the base record, (Data No. 76).					
MINIMUM - 0200			MAXIMUM - 5000		
<b>12</b>	<b>38-41</b>	<b>U 38-41</b>			
<b>Tare Weight</b> [Tank]					
Numeric, report the stencilled light weight (tare) in hundreds of pounds for each unit of the set. Rounding instructions, e.g., actual 17,500 pounds report as 0175 and actual 17,551 pounds report as 0176. The number of units reported must agree relationally with the Articulated field in the base record,					

### Articulated Transaction for Flat Cars

Data No.

Field Positions  
Field Description

Line Positions  
(Equipment Type)

1

1-1

U 1

Line Code

[Flat]

Line Code must always be U. NOTE: When submitting unit information, a "U" transaction for each unit in the articulated/multi-unit set must be submitted.

2

2-2

U 2

Transaction Type

[Flat]

This field should be left blank. Information pertaining to the articulated/multi-unit set should be reported in the base transaction.

NOTE: RAILINC's edit will determine add, change and/or delete transactions as necessary.

The Transaction Code on the OUTPUT will be used to define the transaction as follows: (5) Delete; (6) Add; (7) Change or (8) No Change - this code is sent as information only when no change has been made to the individual unit, however, a change occurred to another unit in the set.

3

3-6

U 3-6

Unit Initial

[Flat]

Alphabetic, report the Reporting Mark stencilled on the side of the unit.

4

7-12

U 7-12

Low Unit Number

[Flat]

Numeric, report the low unit number of the articulated/multi-unit set. Must equal low number in base record. EXAMPLE: Unit number is 123, report 000123.

5

13-18

U 13-18

High Unit Number

[Flat]

Numeric, Must be equal to low unit number in (Data No. 4). If the field is left blank, it will be assumed that it is equal to the low number.

6

19-20

U 19-20

Unit Position

[Flat]

Alphanumeric, RIGHT JUSTIFIED report the code that identifies the unit within the articulated/multi-unit set. (Ex: \_A, report blank A). "U" transactions must follow the base transaction and they must be in ascending order by Unit Position. The 99 codes are as follows:

Unit  
Pos.

Code Position of Unit Within Articulated/Multi-Unit Set

\_A

The A-end unit of the articulated/multi-unit set; the end unit with handbrake facing towards the other units in the articulated/multi-unit set.

\_B

The B-end unit of the articulated/multi-unit set; the end unit with handbrake facing away from the other units in the articulated/multi-unit set.

\_C

Unit next to B-end unit

\_D

2nd unit from B-end; next to "\_C" unit

\_E

3rd unit from B-end; next to "\_D" unit

\_F

4th unit from B-end; next to "\_E" unit

\_G

5th unit from B-end; next to "\_F" unit

\_H

6th unit from B-end; next to "\_G" unit

\_I

7th unit from B-end; next to "\_H" unit

\_J

8th unit from B-end; next to "\_I" unit

Data No.

Field Description

Line Positions  
(Equipment Type)

\_K

9th unit from B-end; next to "\_J" unit

\_L

10th unit from B-end; next to "\_K" unit

\_M

11th unit from B-end; next to "\_L" unit

\_N

12th unit from B-end; next to "\_M" unit

\_O

13th unit from B-end; next to "\_N" unit

\_P

14th unit from B-end; next to "\_O" unit

\_Q

15th unit from B-end; next to "\_P" unit

\_R

16th unit from B-end; next to "\_Q" unit

\_S

17th unit from B-end; next to "\_R" unit

\_T

18th unit from B-end; next to "\_S" unit

\_U

19th unit from B-end; next to "\_T" unit

\_V

20th unit from B-end; next to "\_U" unit

\_W

21st unit from B-end; next to "\_V" unit

\_X

22nd unit from B-end; next to "\_W" unit

\_Y

23rd unit from B-end; next to "\_X" unit

\_Z

24th unit from B-end; next to "\_Y" unit

AA

25th unit from B-end; next to "\_Z" unit

AB

26th unit from B-end; next to "AA" unit

AC

27th unit from B-end; next to "AB" unit

AD

28th unit from B-end; next to "AC" unit

AE

29th unit from B-end; next to "AD" unit

AF

30th unit from B-end; next to "AE" unit

AG

31st unit from B-end; next to "AF" unit

AH

32nd unit from B-end; next to "AG" unit

AI

33rd unit from B-end; next to "AH" unit





## SECTION IX

### Exhibits

Effective: 12/1/2002

**2. PRIOR CAR NUMBER**

Alphanumeric. Mandatory, except for advance-registered cars.

If a car has been restenciled, report the car number of the car just prior to its most recent restenciling. If Prior Car Initial of "NEWX" or "ARXX" is reported, report zeros in the Prior Car Number field or leave the field blank.

**3. PRIOR CAR ERROR CODES****1A – NEW CAR NOT BUILT WITHIN 3 MONTHS**

Car must have been built within past 3 months in order to report Prior Car of "NEWX" in add transaction. If car has been restenciled, submit change transaction with correct Prior Car Initial and Number. Warning only – no fields are errored.

**1B – PRIOR CAR HAS EIN OF ZEROS OR SPACES**

The Prior Car has not been assigned an EIN. Submit a transaction reporting the Prior Car initial and number of the former car so that an EIN will be assigned to Prior Car. Then resubmit this transaction.

**1C – PRIOR CAR FORMAT NOT = NEW CAR FORMAT**

A new EIN has been assigned to the car since this car's format or Built/Rebuilt Year did not match the format or Built/Rebuilt Year of the Prior Car. This message is sent as information only – no fields are errored.

**1D – PRIOR CAR ID NOT VALID W/ SERIES**

When submitting a transaction for a series of cars, the Prior Car must equal "NEWX" or "ARXX". If advanced registered, spaces may be reported.

**4. PROCEDURE FOR REINSTATING THE EQUIPMENT IDENTIFICATION NUMBER AND PRIOR CAR NUMBER WHEN A CAR HAS BEEN ERRONEOUSLY DELETED FROM UMLER AND IS BEING ADDED BACK TO UMLER**

Submit an add transaction for the erroneously deleted car showing a Prior Car of the same car initial or number as the current car. The Equipment Identification Number and Prior Car will be carried over from the deleted car to the car being added back to UMLER.

TYPE E (Rule 16)	TYPE E/F (Rule 17)	TYPE F (Rule 18)	Prohibit in Interchange (Rule 90)	FORMAT E
BE00AHT*	BE00HT*	F70BHT*	BE00	A22XB
BE00BHT*	E42BEX	F70BHT*	BE01AHT	A22XL
BE03*	E50ARE	F70CC	BE01BHT	A121X
BE03AHT*	E50BEX	F70CE	CE00HT	B32KA
BE03HT*	E08AHT*	F70CHT	CE01AHT	M17A
BE07HT	E08AHT*	F70CHTE	CF70AHT	M350A
E42BEX	E08BC	F70DE	CF70HT	M370
E50ARE	E08BE	F70HT*	CF71AHT	M370F
E50BEX	E08BHT	F71BHT*	CF71HT	M375
E80CC	E08BHT*	F71CHT	CF72AHT	M380
E80CE	E80CE	F72BHT*	CF72HT	M380A
E80CHT	E80AE	F72CHT	CF79AHT	M380B
E80CHTE	E80AHT*	F73AC	CF79HT	M381
E80DC	E80BE	F73AE	DOBS	M381A
E80DE	E80CE	F73AHT	E80	M385
E81*	E80CEX	F73AHT*	E80HT	MS4855A
E87AHT	E80HT*	F73BE	E81AHT	MS4856A
E87BC	EF511WE	F73HT*	E81BC	NC390
E87BE	EF528WE	F73HT*	E81HT	NC391
E87BHT	SBE08BC	F70BHT*	E83	NC393
E87BHT*	SBE08BE	F70BHT*	E83AHT	RF333
E87CC	SBE08CE	F70CC	E83HT	WM85DPA
E87CE	SBE08CREX	F70CE		
SBE08CC	SBE08WEX	F70CHT		
SBE08CE	SBE08AE	F70CHTE		
SBE08DC	SBE08BE	F70DE		
SBE08DE	SBE08CE	SF70CC		
SBE08DE	SBE08CREX	SF70CE		
SBE08DREX	SE08BC	SF70CHT		
SBE07BC	SE08BE	SF70CHTE		
SBE07BE	SE08BHT	SF70DE		
SBE07CC	SE08BHT*	SF70CC		
SBE07CE	SE08CE	SF70CE		
SBE07DE				
SBE07CREX	SE08AE	SF70CHT		
SE08CC	SE08BE	SF70CHTE		
SE08CE		SF70DE		
SE08CHT				
SE08CHTE				
SE08DC				
SE08DE				
SE07BC				
SE07BE				
SE07BHT				
SE07BHT*				
SE07CC				
SE07CE				

NOTE: Currently, nine (9) position-coupler types cannot be reported.

The following codes have been created to identify couplers that are not defined above:

	FORMATS A, B, C				FORMAT E
	TYPE D	TYPE E	TYPE F	TYPE E/F	
OBSELETE	DOBS	NA	NA	NA	NA
UNKNOWN	NA	BLNK	FUNK	EFUNK	LOCOUNK
SPECIAL	NA	ESPEC	FSPEC	EFSPEC	NA
ROTARY	NA	NA	FROTARY	EFROTARY	NA

Obsolete: All Type D couplers are obsolete and should report code DOBS; cars with this coupler code will be restricted in interchange as discussed below.

Unknown: If the coupler code is unknown or if the code stamped on the coupler is illegible, the code BLNK, FUNK, EFUNK, or LOCOUNK should be reported.

Special: Codes ESPEC, FSPEC, and EFSPEC have been created to define coupler bodies that have been manufactured specifically for the equipment owner and are not listed in the attached table.

Rotary: The codes FROTARY and EFROTARY have been defined to identify all rotary F and EF coupler types. The codes FROTARY and EFROTARY should be reported instead of the code stamped on the coupler.

**EXHIBIT V****± VALID COUPLER CODES**

\*Obsolete, but not prohibited in interchange.

2005 Office Manual  
of the  
AAR Interchange Rules

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## Appendix A

### Definitions

This section is intended to provide subscribers with a glossary of the more frequently used interchange terms throughout both the AAR Field and Office Manuals of the AAR Interchange Rules.

<b>AAR Agent:</b>	AAR designated personnel authorized to conduct inspections and investigations to ensure compliance with the AAR Interchange Rules.
<b>AAR Manual of Standards and Recommended Practices (MSRP):</b>	Publications containing the technical specifications and quality assurance requirements for interchange freight cars and components. Considered mandatory when specifically referenced in AAR Interchange Rules.
<b>Additional Costs:</b>	Charges included in Rule 107 that are in addition to Settlement Value. Responsible party (equipment owner or damaging road) is determined in Rule 107.
<b>Additions:</b>	Capitalized components added (not replaced) to existing equipment which are included in the investment account.
<b>Alternate Standard:</b>	A product or device which is approved by the AAR for use in interchange service in lieu of the Standard and is equal to or exceeds the requirements of the AAR Standard. Any manufacturer providing material to the requirements of an AAR Alternate Standard must provide evidence of compliance upon request.
<b>Approved:</b>	The status of an item of equipment, practice or procedure, design, product, device, or facility which has been reviewed by the AAR and found to meet the applicable requirements of an AAR specification, standard, alternate standard, or recommended practice.
<b>Articulated Car:</b>	A multi-unit car which is permanently connected by articulated connectors supported by a shared truck and identified by a single car number.
<b>Automatic Equipment Identification (AEI):</b>	A transponder (tag) which is activated by low energy radio waves broadcast by wayside installations (scanners). The tag utilizes the energy to reflect back programmed information.
<b>Back Shop:</b>	A railroad's major repair facility(s) for performing heavy repairs or wreck repairs (sometimes referred to as heavy shop or system maintenance facility).
<b>Bad Order Car:</b>	An interchange freight car which is in need of mechanical attention and/or repairs as defined in the AAR Interchange Rules or by any governmental regulatory requirement.
<b>Betterments:</b>	Capitalized improvements of existing parts through the substitution of superior for inferior parts replaced on a freight car.

# The Car and Locomotive Cyclopedia of American Practices

## Sixth Edition

Combining the Car Builders' Cyclopedia, first published in 1879 as the "Car Builders' Dictionary," and the Locomotive Cyclopedia, first published in 1906 as the "Locomotive Dictionary," combined as the Car and Locomotive Cyclopedia in 1966.

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Publisher

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Production Manager

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Foreword by:

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*Publisher, Railway Age, Retired*

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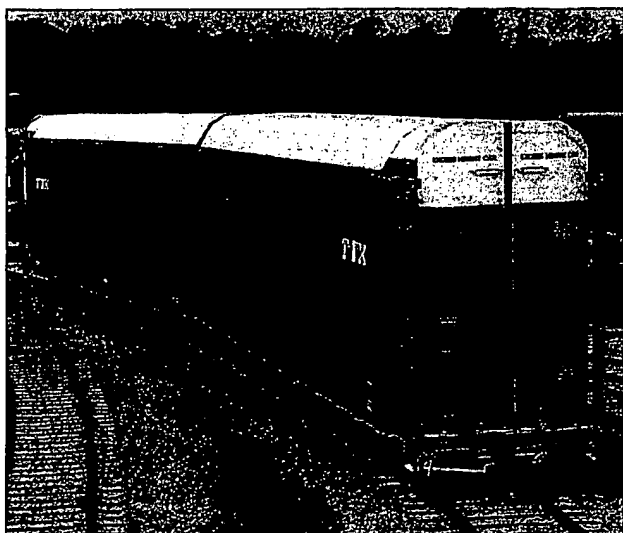
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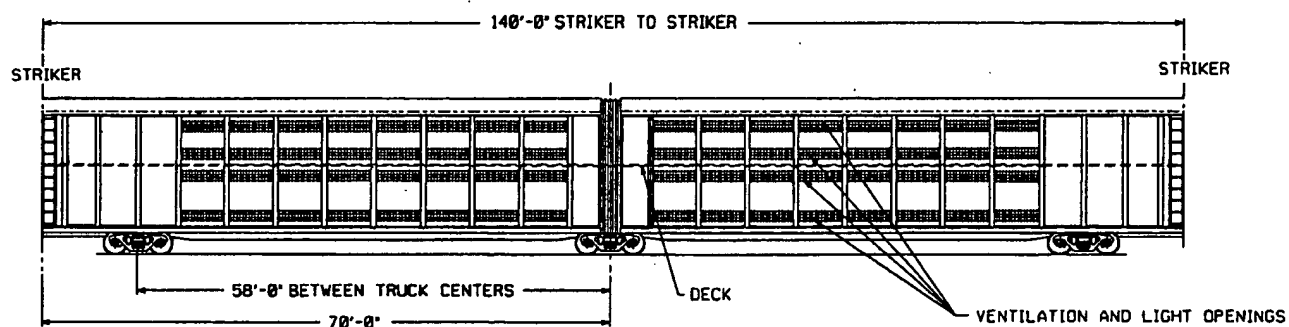
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The ABL car designed and built by Thrall Car in partnership with TTX Company. [Photo courtesy of Thrall Car Manufacturing Co.]

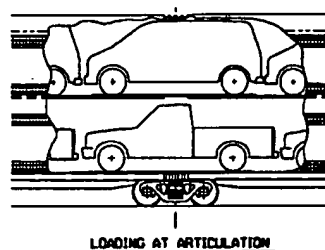
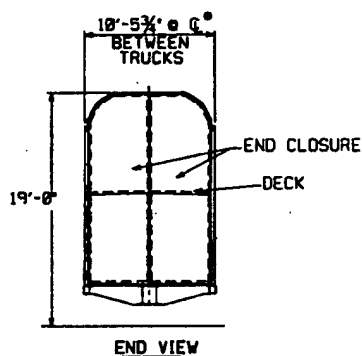
## Dimensions

Length over strikers .....	140'0"
Extreme heights .....	19'0" max
Extreme width	
(at mid-point between truck centers) .....	10'5½"
Car floor height (ATR) .....	3'3½"
"B" deck height at running surface .....	10'10½"
"A" deck clear height at articulation .....	87½"
"A" deck clear height at entry .....	87½"
"A" deck clear height at remainder of interior .....	88½"
"B" deck clear height at articulation .....	91½"
"B" deck clear height at entry .....	94½"
"B" deck clear height at remainder of interior .....	95½"
Inside width at interior posts .....	9'10½"
Inside width (between posts) .....	10'5½"
Inside width at articulation (flexible closure) .....	9'6"
Inside width at "A" deck floor .....	9'10½"



**New SealSafe Radial Door™**

More information on back



[Drawing courtesy of Thrall Car Manufacturing Co.]

**Association of American Railroads  
Mechanical Division  
Manual of Standards and Recommended Practices**

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**4.1.5.2.**

For cushion underframe cars having sliding sills, a vertical upward load shall be applied to the sliding center sill in a plane at the ends of the fixed center sills sufficient in magnitude to lift the fully loaded car free of the truck nearest the applied load.

**4.1.5.3.**

All cars shall have the capability to sustain a vertical up and down load of 50,000 lbs. at the pulling face of the coupler.

**4.1.6. JACKING LOAD**

Car structure shall be designed to sustain forty percent of gross rail load applied to each jacking pad, with stresses not to exceed yield strength. The jacks shall be placed under portion of car extending outside of rails, preferably under side sills at body bolster or under ends of body bolster. Where necessary, suitable jacking pads shall be provided for the jacks.

Should the design of car be such as to preclude jacking car at locations specified above, application for approval for other location shall be made by the carbuilder or by the design agency, if other than the carbuilder, to the Director, Technical Committees - Freight Car Construction, of the Mechanical Division.

**4.1.7. ROOF LOADS**

The roof of box or other house type cars shall be capable of sustaining a uniformly distributed load of 15 pounds per square foot of projected area plus a concentrated load of 300 pounds.

**4.1.8. DRAFT LOAD**

The car structure shall be designed to sustain a draft (tensile) or buff (compression) drawbar and/or train-action load of 350,000 pounds applied on the front or rear draft lugs at each end of the car along the nominal centerline of the couplers.

**4.1.8.1. DRAFT LOAD DISTRIBUTION**

**4.1.8.1.1.**

The draft load for cars in this group shall be distributed to all longitudinal underframe members between bolsters based on the relative flexibility of the bolster and all the longitudinal underframe members. The attachment of such members to all transverse members of the underframe must be sufficient to provide the necessary restraint and develop the required strength for the increment of the draft load distributed to each member.

**4.1.8.1.2. CARS UTILIZING SPECIAL CUSHIONING DEVICES CONFORMING TO AAR SPECIFICATIONS FOR SUCH DEVICES**

For cars equipped with sliding sills, the entire draft load shall be sustained by the sliding sill.

For cars equipped with fixed center sills and special cushioning devices mounted in or at the end of the center sills, the draft load shall be distributed as specified in 4.1.8.1.1.



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#### 4.1.9. COMPRESSIVE END LOAD

The car structure shall be designed to sustain a compressive columnar load of 1,000,000 pounds applied at the rear draft lugs at each end of car on the nominal centerline of couplers. The car structure shall be so proportioned that the induced stresses resulting from the compressive columnar load shall not exceed the allowable unit stresses given in 4.2.

Compliance with this requirement may be demonstrated analytically or by tests.

When tests are made to demonstrate capability, they shall be conducted in accordance with requirements of 11.2.3.1 using appropriate equipment to register loads and strains.

It is recognized that the proportionality of stress to strain ceases at the proportional limit. The conversion of test strain to stress may be made by multiplying the strain by the appropriate modulus of elasticity or when permanent set exists by subtracting this value from the maximum strain and multiplying by the appropriate modulus of elasticity provided a subsequent loading at the same value causes no appreciable increase in permanent set.

##### 4.1.9.1. COMPRESSIVE END LOAD DISTRIBUTION

###### 4.1.9.1.1.

The compressive end load for cars in this group shall be distributed to all longitudinal underframe members between bolsters based on the relative flexibility of the bolster and all the longitudinal underframe members. The attachment of such members to all transverse members of the underframe must be sufficient to provide the necessary restraint and develop the required strength for the increment of the compressive end load distributed to each member.

###### 4.1.9.1.2. CARS UTILIZING SPECIAL CUSHIONING DEVICES CONFORMING TO AAR SPECIFICATION FOR SUCH DEVICES

###### 4.1.9.1.2.1.

For cars equipped with sliding sills, the entire compressive end load shall be sustained by the sliding sill.

###### 4.1.9.1.2.2.

For cars equipped with fixed center sills and special cushioning devices mounted in or at the end of the center sills, the compressive end load shall be distributed as specified in 4.1.9.1.1.

#### 4.1.10. IMPACT LOAD

The car structure shall be designed to sustain the reaction and inertia forces resulting from a single ended impact. The impact strength capability must be demonstrated analytically and/or by test of a prototype car or car component at the option of the Car Construction Committee. When prototype car tests are made to demonstrate this capability they shall be conducted in accordance with 11.2.4.1. using appropriate instruments to record loads and strains.

###### 4.1.10.1. CARS UTILIZING CONVENTIONAL DRAFT GEARS CONFORMING TO AAR SPECIFICATIONS M-901, M-901-A, M-901-C, M-901-D, or M-901-E

Cars in this group shall be shown to have the structural capability of withstanding a coupler force of 1,250,000 pounds applied to one end of the car.

**Association of American Railroads**  
**Technical Services Division—Mechanical Section**  
**Manual of Standards and Recommended Practices**

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**2.1.4.2.1. MINIMUM CURVE COUPLED TO BASE CAR AND LIKE CAR**

<b>Length Over Pulling Faces of Couplers</b>	<b>Minimum Radius Base and Like Car</b>
Less than 50'	185'
Over 50' to 56'	215'
Over 56' to 63'	250'
Over 63' to 70'	275'
Over 70' to 75'	300'
Over 75'	350'

On multi-unit cars the length over pulling face of couplers is defined as twice the distance from the pulling face to the mid-point between trucks on end unit, twice the distance from the center line of draw bar to the mid-point between trucks and the truck centers on articulated cars. All conditions must be checked.

**2.1.4.2.2. MINIMUM CURVE FOR CARS UNCOUPLED**

For cars having truck centers of 46' 3" or less—150 ft. radius. For cars having truck centers greater than 46' 3" 180 ft. radius. For multi-unit cars, the truck centers of the longest individual unit will be used.

**2.1.4.2.3. BASE CAR**

The base car is equipped with SBE60C design couplers and Y40A design yokes, applied to the car as in Standard S-239, and has the following dimensions:

Length over pulling faces of couplers	44' 7 $\frac{7}{8}$ "
Length over strikers	42' 0 $\frac{3}{8}$ "
Truck centers (T.C.)	31' 1 $\frac{1}{8}$ "
Overhang (centerline of bolster to striker face)	5' 5 $\frac{1}{2}$ "
Horn clearance	0' 3 $\frac{3}{4}$ "

**2.1.4.2.4. CURVE NEGOTIATION—STANDARD METHOD OF CALCULATION OF MINIMUM RADIUS**

This method may be used to determine the minimum horizontal curve and tangent any two coupled cars can negotiate. Tables are included giving dimensions pertinent to the standard coupler applications when draft gears are in normal position. The formulae presented are simplified empirical equations derived from studies of exact methods and actual car service data.

**2.1.4.2.4.1. PLACEMENT OF CARS**

The most critical design condition is the curve and tangent with no easement. In this condition one car is on tangent and the other on curve. If different length cars are involved, the critical condition usually occurs with the shorter car on the tangent, but the long car on the tangent should be analyzed.

Two like long cars coupled, each equipped with Type F couplers, may be more restrictive than one long car equipped with Type F couplers and coupled to base car.

The cars are placed with the coupling line at point of tangency when Formula No. 1 is used. Generally, this is the critical positioning when couplers with large amounts of contour angling are used, such as E and E/F couplers.

The cars are placed with the coupler pivot point of the car on the tangent at the point of tangency when Formula No. 2 is used. Generally, this is the critical positioning when couplers with small amounts of contour angling are used, such as F couplers.

In all cases, like cars and the car being studied coupled to the base car must be checked.

**X. Related Proceedings Appendix**

There are no related proceedings.

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